RISSING
OUT OF THE
WRATH
The Post-Disaster Religious landscape of Kedarnath valley, Uttarakhand, India
VANSHIKA BHARAIJ

P5 LANDSCAPE ARCHITECTURE
First Mentor: Inge Bobbink
Second mentor: Henri van Bennekom
Chorabari Glacial Lake

- Fed by snow melt and rainfall
- 2,500m³
- 172 pools
- No natural drainage of the lake
- Lake depth increasing by 2–4 metres per year
- 3 km trek
- 4 hours
- 10 minutes to drain the entire lake into the Kedarnath Valley

Kedarnath
Chorabari Lake
<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Pilgrims</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>400014</td>
</tr>
<tr>
<td>2011</td>
<td>570000</td>
</tr>
<tr>
<td>2012</td>
<td>548166</td>
</tr>
<tr>
<td>2013</td>
<td>312201</td>
</tr>
<tr>
<td>2014</td>
<td>40832</td>
</tr>
<tr>
<td>2015</td>
<td>154430</td>
</tr>
<tr>
<td>2016</td>
<td>309746</td>
</tr>
</tbody>
</table>

As per the figures, Expected pilgrims in Kedarnath 2017 may rise to 10 lacs (1 million)
On its last legs…

Nature
Sacred Pilgrimage
Fragile Landscape
RESEARCH QUESTION

HOW CAN THE CULTURE, SANCTITY AND THE ‘SENSE OF PLACE’ OF THE POST-DISASTER, RELIGIOUS LANDSCAPE OF KEDARNATH VALLEY BE PRESERVED AND SPATIALLY ENHANCED ALONG WITH PROVIDING FLOOD RESILIENCE STRATEGIES AND RESTRUCTURING THE UNCHECKED TOURISM AND UNREGULATED URBAN SPRAWL?

• WHAT ARE THE EXISTING FLOOD DEFENSE MECHANISMS IN THIS REGION?

• DOES INDIAN MYTHOLOGY OR VERNACULAR TECHNIQUES OF THE REGION OF THE LANDSCAPE SUGGEST FLOOD RESILIENT STRATEGIES?

• HOW CAN THE PILGRIMS AND TOURISTS ADAPT TO THE STRATEGIES PROVIDED AND HOW CAN THESE STRATEGIES BE MADE FLOOD RESILIENT INVOLVING THE LOCALS AND VISITORS?

• HOW CAN ROOTEDNESS AND COMMUNITY RESILIENCE ENABLE THE PEOPLE OF KEDARNATH TO MAINTAIN THEIR ‘SENSE OF PLACE’?

• WHAT ARE THE DIFFERENT ECOLOGICAL PROCESSES THAT HAVE TAKEN PLACE IN HISTORY?

• HOW CAN THE DYNAMIC LANDSCAPE PROCESSES LIKE SEDIMENTATION & EROSION HELP IN RESTRUCTURING THE LANDSCAPE?

• HOW CAN THE PILGRIMAGE ROUTE BE MADE LESS RISKY, ALL WEATHER AND MORE SUSTAINABLE?
DYNAMIC WATER SYSTEM DESIGN

SPATIAL DESIGN FOR THE RELIGIOUS LANDSCAPE

PROTOTYPE OF LANDSCAPE ARCHITECTONIC ELEMENT FOR FLOOD RISK MANAGEMENT

THROUGH DIFFERENT SCALES
'Sadhu'
THE MONK

'Kandi'
THE PORTER

'Yatri'
THE PILGRIM

'Pandit'
THE PRIEST

'Paryatak'
THE SEASONAL TREKKER

'Niwasi'
THE LOCAL RESIDENTS

USER GROUP
‘THIS IS OUR LIVELIHOOD. IF TOURISM STOPS OUR LIVES STOP TOO. WE EARN FOR 6 MONTHS AND THEN WE RELAX.’
- 27 year old daily worker, Sprayag

‘WE ARE A LITTLE SCARED. THE GOVERNMENT MIGHT ASK US TO LEAVE TO CONSTRUCT MORE FACILITIES FOR TOURISTS.’
- 48 year old local, Triyuginarayan

‘TOURIST FACILITIES ARE INCREASING BY THE DAY. NEW HOTELS, NIGHT STAYS AND RESTAURANTS ARE COMING UP IN THE REGION.’
- 45 year old contractor, Gaurikund
'Sadhu'

'Kandi'

'Pandit'

Seasonal 'Local'

---

SEASONAL ECONOMY

OPPORTUNISTS

SEASONAL PILGRIMAGE

OPPORTUNITY

'Seasonal trekker'

'Yatri'
DRIVERS OF CHANGE
OVERLAPPING INFLUENCES OF SITE CONDITIONS

ENERGY

TECHNOLOGY + DESIGN

WATER

SACRED RANGES

EROSION/DEBRIS

ECOLOGICAL IMBALANCE

TOURISM

MOBILITY AND TRANSPORTATION

PRIORITY ACTIVITIES

RELIGIOUS ACTIVITIES

ECONOMIC BACKBONE

HOUSING/INFRASTRUCTURE

POLITICS

CONTROL/ADAPT
Harness Natural Water Surges

PRESERVE/ENHANCE
Maintain the sanctity of place

ENGAGE/CONNECT

SUSTAINABLE PUBLIC INFRASTRUCTURE

CHANGE/REVERSE
Sustainable rural/carbon livelihoods

Rudernath valley is the confluence of the 2 principal fowl rivers - Mandakini and Saraswati which are at a constant flood risk. Increasing rainfall and chief births every year is also because that affect the (illuminated) condition of housing and infrastructure affecting the seasonal influx of tourism.

The sacredness of place of the valley is due to its religious aura. If tourism is increased the sacredness of peace and seclusion would go missing. If tourism decreases, scariness go down and unemployment will affect many dwellers. The religious activities can be affected in case river dry up due to the holiness of the river. In floods it disrupts tourist activities, health and infrastructure.

The religious valley hosts about a million tourists every year and hence their waste circulating the valley economy with a net worth of ₹1,000 crore. With more and more tourists coming every year, housing and infrastructure becomes hypercompetitive and in turn affects the religious pilgrimage. Tapping on to the potential of the amount of tourism visiting every year, resources need to be taken where the valley benefits from the tourists as well and not that the environment depletes slowly for years to come.

The dilapidated condition of the infrastructure is an increasing threat to the numerous tourists that visit the valley each year. The nodal drunken condition are an important factor for the rescue and development for the existing infrastructure hence more and more sustainable techniques should be implemented to cater to this issue.

DRIVERS OF CHANGE
MODEL EXPLORATION
divert

slow and purify
CARVING THROUGH THE SITE
+ gabion as a structural system

+ cut and fill
5 Years after Intervention
ON-SITE DEVELOPMENT & CONSTRUCTION STAGES
- pitched roof 30° towards south
- 1.2m X 1m PV panels generating 0.9 kwh/day yearly average
- gabion as a structural system
- building ruins

RUINS AS MEMORY
A day in the life of a pilgrim...
THE PORTER: DAILY TRAVELLER
Pankaj Didiyal, 27

- Porter travels daily to the valley with group of horses.
- Familiar with route changes due to landslides and weather conditions as travels on a day to day basis.
- Map is not to scale but detailed to the level of exact distances with location names.
- Major landmarks like Helipads, River and temples are highlighted.
- Route is highly complicated hence every turn and bend is accurately drawn.
EDUCATION AND AWARENESS
PERMANENT + TEMPORARY

SHELTER

SAFETY

GENERATIVE ECOSYSTEM EXPERIENCE

EMPLOYMENT

EDUCATION

COMMUNITY BUILDING

RESILIENCE

AWARENESS

SUSTAINABILITY
APPENDIX
LANDFORM DYNAMICS: HISTORIC EVOLUTION

Glacier proceeds
Flavo-Glacial deposits
Glacier recedes
Moraine formation
Island formation
Building blocks

Planters

Seating spaces

Steps

Partitions and walls
PAVING AND MATERIALITY

- **MAIN PATH**
  - Recycled concrete

- **WATERWALK PATH**
  - Metal mesh + aggregate boardwalk

- **MAIN SQUARE**
  - Permeable material

- **WALL WALK**
  - Rocks and earth

- **PATH IN LOW AREAS**
  - Steppingstones

- **BRIDGES**
  - Metal mesh + aggregate + recycled concrete
THE DYING WATERMILLS OF UTTARAKHAND

GHRATS

- Traditional technique
- Installed at bank of river
- Help harness water,DrawerToggle